

CLEANSING A BAY*

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION

OUR EXPERIENCE WITH SAN DIEGO BAY ILLUSTRATES A FUNDAMENTAL PRECEPT OF ESTUARINE POLLUTION CONTROL: GET THE WASTES OUT, AND NATURE WILL COMPLETE THE JOB OF RESTORATION. COMMON-SENSE THINKING OF THAT SORT UNDERLIES WHAT HAS BEEN ACCOMPLISHED TO DATE AT SAN DIEGO. NO GREAT ENGINEERING OR SCIENTIFIC MILESTONES WERE ESTABLISHED. NO NEW INSTITUTIONAL CORNERS WERE TURNED. NOT MUCH WAS AVAILABLE AT THE TIME TO LIGHTEN FINANCIAL BURDENS.

YET, SAN DIEGO BAY, ONCE A METROPOLITAN CESSPOOL, IS NOW CLEAN, NOW GAINING RECOGNITION AS A MODEST LANDMARK IN THE WAR AGAINST ESTUARINE POLLUTION. THE ONLY REALLY DISTINGUISHING FEATURE OF OUR BAY CLEAN-UP WAS ITS ACCOMPLISHMENT DURING AN ERA OF WIDESPREAD INDIFFERENCE TO WATER POLLUTION. WHILE OTHERS WILTED BEFORE ECONOMIC AND TECHNICAL BARRIERS, SAN DIEGO COMMUNITIES AND INDUSTRIES RESPONDED IN A POSITIVE MANNER TO STATE DEMANDS FOR PROGRESS. PROBLEMS WERE ATTACKED IN A RESOLUTE, ORDERLY WAY, WITHOUT TECHNOLOGICAL OR POLITICAL OBFUSCATION. THE COMMONLY RECOGNIZED GOAL WAS RESTORATION OF BAY WATER QUALITY. AS A RESULT, WE ARE NOW ALMOST WITHIN REACH OF A BAY COMPLETELY FREE OF WATER POLLUTION.

THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD AND THE SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD ARE PLEASED TO KNOW THAT THE SAN DIEGO BAY EXPERIENCE IS LOOKED UPON AS A MODEL WHICH MIGHT BE EMULATED ELSEWHERE. I AM HAPPY TO SHARE THAT EXPERIENCE WITH YOU, AND I HOPE THAT MY REMARKS WILL BE OF SOME HELP.

SAN DIEGO BAY, ONE OF THE FEW NATURAL HARBORS OF THE WEST COAST, IS THE MOST SOUTHERLY EMBAYMENT IN CALIFORNIA. IT FORMS A 15 MILE LONG ARC, VARYING IN WIDTH FROM ONE-QUARTER MILE TO TWO AND ONE-HALF MILES. THE BAY HAS ONLY A SINGLE, NARROW OPENING TO THE OCEAN, BETWEEN NORTH ISLAND AND POINT LOMA AT ITS NORTH END. DEPTHS VARY FROM JUST A FEW FEET TO ABOUT 40 FEET. MORE THAN HALF THE BAY IS TOO SHALLOW TO ACCOMMODATE DEEP DRAFT VESSELS. ALTHOUGH IT RECEIVES MOST OF THE SURFACE DRAINAGE OF THE METROPOLITAN ZONE, NO MAJOR STREAMS FLOW INTO THE BAY. THE STREAMS THAT DO, FLOW ONLY INTERMITTENTLY, DURING OUR WINTER RAINY PERIODS. CONSEQUENTLY, OVER-ALL CIRCULATION OF WATER IN THE BAY IS POOR, DRIVEN PRIMARILY BY TIDAL FLUSHING THROUGH THE NARROW MOUTH. WE ESTIMATE THAT A FOREIGN SUBSTANCE DISCHARGED AT THE MIDPOINT OF THE BASIN HAS A HALF LIFE OF SEVEN DAYS; THAT IS, IT TAKES ABOUT A MONTH TO FLUSH THAT MATERIAL OUT OF THE BAY.

IN 1542, PORTUGUESE NAVIGATOR JUAN RODRIGUEZ CABRILLO ENTERED THE BAY, CLAIMED THE AREA FOR SPAIN AND NAMED IT SAN MIGUEL. SIXTY YEARS LATER, IN 1602, SABASTINI VIZCAINO SHOWED UP AND RENAMED THE SPOT SAN DIEGO. THE

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PUEBLO OF SAN DIEGO HAD ITS BIRTH IN THE FOUNDING OF THE FIRST CALIFORNIA MISSION BY JUNIPERO SERRA IN 1769. THE UNITED STATES FIRST GAINED POSSESSION OF THE AREA ON JULY 29, 1846. POPULATION OF THE PUEBLO WAS THEN 500 PERSONS.

WESTWARD TIDES OF IMMIGRATION WERE FELT IN SAN DIEGO, AND DURING THE NEXT FIFTY YEARS POPULATION INCREASED BY THREE THOUSAND PERCENT TO 16,000 INHABITANTS. DURING THE LATTER PART OF THE 19TH CENTURY, SAN DIEGO BEGAN TO DISCHARGE ITS SEWAGE INTO THE BAY. AN 1889 REPORT BY THE CITY BOARD OF PUBLIC WORKS CASTIGATED THIS PRACTICE IN A DELIGHTFUL WAY AS AN "UNPARDONABLE BLUNDER, UNQUALIFIED BY A SINGLE REDEEMING FEATURE." FEW PERSONS, IF ANY, MUST HAVE PAID ATTENTION TO THAT EARLY REMONSTRATION. AS THE POPULATION GREW, MORE RAW SEWAGE OUTFALLS WERE PUSHED OUT INTO THE BAY AND THE NEARBY OCEAN.

BY 1950, SAN DIEGO'S OUTFALLS HAD BEEN TIED INTO A SINGLE SYSTEM, LEADING TO AN IMHOFF TANK WHICH DISCHARGED TO THE BAY. THAT ARCHAIC UNIT WAS INADEQUATE TO HANDLE THE VOLUMES OF SEWAGE BEING GENERATED EVEN BEFORE IT WENT INTO SERVICE! A NUMBER OF SMALLER COMMUNITIES, GOING THEIR SEPARATE WAYS, ALSO HAD SEWAGE TREATMENT PROGRAMS. BUT THEIR PLANNING WAS NO BETTER THAN THAT OF SAN DIEGO. EVERY DISCHARGE WAS CREATING ITS OWN SET OF WATER POLLUTION AND PUBLIC HEALTH PROBLEMS, IN THE FACE OF AN UNPRECEDENTED POPULATION EXPLOSION. SOME 400,000 RESIDENTS WERE OVERWHELMING SMALL-TOWN WASTE FACILITIES IN SIX CITIES AND SEVERAL UNINCORPORATED COMMUNITIES OF OUR BAY AREA BY MID-CENTURY.

TO SAN DIEGO'S CREDIT, SOME THOUGHT WAS GIVEN TO COPING WITH THE SITUATION. SEVERAL NEIGHBORING COMMUNITIES WERE TIED INTO THEIR SYSTEM BEFORE 1950. THIS MEASURE AMELIORATED SOME FRINGE-AREA POLLUTION PROBLEMS BY CONVEYING SUBURBAN SEWAGE TO THE BAY THROUGH CITY LINES. A NEW SEWAGE TREATMENT PLANT WAS COMPLETED IN 1950 AS A REPLACEMENT FOR THE IMHOFF TANK. HOWEVER, THIS PROJECT WAS ALSO MARKED BY SHORT-SIGHTEDNESS AND LIMITED COMPREHENSION OF POLLUTION PROBLEMS. THE FACILITY WAS DESIGNED TO PROCESS 40 MILLION GALLONS PER DAY; THE DAY IT WENT INTO OPERATION THE PLANT HANDLED 37 MILLION GALLONS. OBVIOUSLY, IT WASN'T LONG BEFORE SAN DIEGO AGAIN HAD AN OVERLOADED TREATMENT WORKS. PERHAPS MORE IMPORTANT, ONLY PRIMARY TREATMENT WAS PROVIDED FOR DISCHARGE INTO A BAY WITH LITTLE OR NO ASSIMILATIVE CAPACITY. IN ADDITION, THERE WAS NOTHING IN THE WAY OF DISINFECTION FOR THE PROTECTION OF THE THOUSANDS OF PEOPLE COMING INTO DAILY CONTACT WITH BAY WATERS.

SAN DIEGO'S NEW SEWAGE TREATMENT PLANT DID BECOME A LOCAL LANDMARK, NOTED MORE FOR ITS ABILITY TO ASSAIL THE ATMOSPHERE WITH A PROFUSION OF ODORS THAN FOR PREVENTING POLLUTION.

ON THE OTHER HAND, SAN DIEGO WAS ATTEMPTING TO DO SOMETHING, BY CONTRAST TO OTHER DISCHARGERS. FIVE FISH CANNERIES, A LARGE RENDERING OPERATION, A KELP PROCESSING PLANT, FOUR AIRCRAFT PLANTS AND A MILITARY INSTALLATION WERE DISCHARGING UNTREATED INDUSTRIAL WASTE TO THE BAY. RAW SEWAGE WAS BEING DISCHARGED BY THE CITY OF CORONADO AND THE NAVAL AMPHIBIOUS BASE. EACH DISCHARGE HEAPED ITS OWN PARTICULAR ABUSES UPON THE OVERBURDENED RECEIVING WATERS. BY 1950, OUR BAY WAS RAPIDLY BECOMING THE METROPOLITAN CESSPOOL.

THAT'S WHEN THE STATE OF CALIFORNIA WATER POLLUTION CONTROL PROGRAM WAS INITIATED, AND THE CAVALRY CAME RIDING OVER THE HILL. THE ANALOGY FITS:

AFTER SOME SKIRMISHES, MEMBERS OF THE POLLUTION CONTROL UNIT WERE DUBBED THE MEN ON WHITE HORSES IN CERTAIN QUARTERS.

LET ME BRIEFLY EXPLAIN THE MAKE-UP OF OUR STATE PROGRAM, BECAUSE I BELIEVE THAT SOME OF ITS UNIQUE FEATURES DIRECTLY ACCELERATED CLEAN-UP OF SAN DIEGO BAY. PASSAGE OF THE DICKEY ACT IN 1949 INAUGURATED OPERATION OF NINE REGIONAL WATER POLLUTION CONTROL BOARDS, EACH ONE HAVING JURISDICTION OVER A DRAINAGE AREA OF THE STATE SPECIFICALLY SPELLED OUT IN THE LAW. EACH REGIONAL BOARD WAS COMPRISED OF FIVE NON-PAID MEMBERS APPOINTED BY THE GOVERNOR. THE NINE REGIONAL BOARDS WERE LOOSELY AFFILIATED WITH THE STATE WATER POLLUTION CONTROL BOARD IN SACRAMENTO. THE SAN DIEGO REGIONAL WATER POLLUTION CONTROL BOARD WAS ASSIGNED AN AREA EXTENDING FROM THE MEXICAN BORDER ON THE SOUTH TO A POINT JUST SHY OF NEWPORT BEACH ON THE NORTH. OVER THE PAST TWENTY YEARS, THERE HAVE BEEN NO REVISIONS IN THIS AREA -- ABOUT 120 MILES OF COASTLINE, THE CONTIGUOUS OCEAN, ALL INCLUDED BAYS AND ABOUT 3500 SQUARE MILES OF LAND DRAINING INTO THE OCEAN BETWEEN THE TWO POINTS.

AT THE OUTSET OF THE PROGRAM, THE ENFORCEMENT TOOLS PROVIDED TO THE REGIONAL BOARDS WERE WEAK. THROUGH THE YEARS, THE LAW HAS BEEN IMPROVED VERY SIGNIFICANTLY. WE NOW HAVE A STRONG, FULL-TIME PARENT BOARD IN SACRAMENTO, THE STATE WATER RESOURCES CONTROL BOARD, TO WHICH THE REGIONAL BOARDS ARE VERY CLOSELY TIED. REGIONAL BOARD MEMBERSHIP HAS BEEN INCREASED TO NINE APPOINTEES AND RESPONSIBILITIES HAVE BEEN EXPANDED. OUR CURRENT DESIGNATION, WATER QUALITY CONTROL BOARD, REFLECTS THAT EXPANDED RESPONSIBILITY.

PASSAGE OF THE PORTER-COLOGNE WATER QUALITY CONTROL ACT IN 1969 GAVE CALIFORNIA WHAT IS CONSIDERED THE TOUGHEST ANTI-WATER POLLUTION CONTROL LAW IN THE NATION. THE NEW LAW RETAINS THE REGIONALIZED APPROACH WHICH WORKED SO WELL IN SAN DIEGO.

WHEN THE SAN DIEGO REGIONAL WATER POLLUTION CONTROL BOARD CAME UPON THE SCENE IN 1950, ITS FIVE MEMBERS QUICKLY REACHED THE CONCLUSION THAT: (1) SAN DIEGO BAY WAS A MESS AND WAS THE MAJOR PROBLEM CONFRONTING THE BOARD; (2) THERE WAS A CRITICAL NEED FOR COOPERATIVE INTERCOMMUNITY PLANNING AND ACTION, ESSENTIAL FOR PROGRESS AGAINST POLLUTION; (3) THE SOLUTION TO INDUSTRIAL AND MILITARY BASE PROBLEMS WAS PART OF THE COMMUNITY SOLUTION; (4) REMEDIAL FACILITIES MUST HAVE LONG TERM ADEQUACY TO PREVENT THE CYCLES OF RAPID OVERLOAD ALREADY EXPERIENCED. WITHIN THEIR FIRST FEW MEETINGS, BOARD MEMBERS HAD DECIDED TO PRESS FOR A METROPOLITAN SYSTEM TO REMOVE ALL SEWAGE AND MOST INDUSTRIAL WASTE DISCHARGES FROM THE BAY. THEY LOST NO TIME IN PUTTING THEIR IDEA TO WORK.

ALL LOCAL GOVERNMENTAL UNITS IN THE SAN DIEGO AREA WERE INFORMED THAT THEY WERE FOSTERING DESTRUCTION OF A MAJOR NATURAL RESOURCE THROUGH IGNORANCE AND INDIFFERENCE. UNITED ACTION TO PERMANENTLY CORRECT THE ABUSES WAS DEMANDED BY THE REGIONAL BOARD, WHICH PROPOSED FORMATION OF A METROPOLITAN SEWERAGE PLANNING COMMITTEE. INTEREST WAS IMMEDIATELY AROUSED BECAUSE THE BOARD MEMBERS, INDIVIDUALS OF SOME PROMINENCE IN THE AREA, WERE RAISING A FUSS. A METROPOLITAN SEWERAGE PLANNING COMMITTEE WAS QUICKLY FORMED. ITS MEMBERSHIP INCLUDED REPRESENTATIVES OF ALL BAY-AREA CITIES, SEWERAGE DISTRICTS, THE COUNTY OF SAN DIEGO AND THE SAN DIEGO CHAMBER OF COMMERCE.

IT DID NOT TAKE THE COMMITTEE LONG TO ARRIVE AT PRECISELY THE SAME

CONCLUSIONS ALREADY WORRYING THE REGIONAL BOARD. THE GROUP WENT BEFORE THE SAN DIEGO COUNTY BOARD OF SUPERVISORS AND ASKED FOR A COUNTY-WIDE STUDY OF IMMEDIATE AND LONG-TERM SEWERAGE NEEDS. SUPERVISORS WERE CONVINCED AND, IN 1951, CONTRACTED FOR AN ENGINEERING STUDY TO PRODUCE A MASTER PLAN COVERING THE ENTIRE COUNTY, INCLUDING METROPOLITAN SAN DIEGO, UP TO THE YEAR 2000. IT SEEMS AMAZING NOW THAT THE ENTIRE JOB WAS CAREFULLY DONE AND A PLAN PRODUCED FOR AN AREA AS LARGE AS THE STATE OF CONNECTICUT FOR ONLY \$60,000, ALL LOCAL FUNDS.

BY THE TIME THE COUNTY SEWERAGE SURVEY WAS IN MOTION, THE REGIONAL BOARD HAD ADOPTED ITS PRELIMINARY WATER POLLUTION CONTROL OBJECTIVES FOR SAN DIEGO BAY. WHILE VERY TERSE IN COMPARISON TO PRESENT DAY PRACTICE, THE OBJECTIVES SET MINIMUM PERMISSIBLE LEVELS FOR DISSOLVED OXYGEN, COLIFORM CONCENTRATION LIMITS; PROHIBITED OIL SLICKS, FLOATABLE MATTER, DISCOLORATION, TOXIC EFFECTS AND ODORS. THE OBJECTIVES FORECAST MORE ELABORATE STANDARDS TO BE SET IN SUBSEQUENT ACTIONS FOR STATE AND INTERSTATE PURPOSES.

WHILE PUSHING FOR THE COUNTYWIDE SURVEY, THE REGIONAL BOARD LAUNCHED ITS OWN STUDY OF POLLUTION IN SAN DIEGO BAY, STARTING IN 1951. AGAIN, IN RETROSPECT, WHAT WAS DONE WITH ONE OR TWO THOUSAND DOLLARS IN THOSE DAYS IS NOTHING SHORT OF ASTONISHING. THE FIRST COMPREHENSIVE ESTUARINE POLLUTION STUDY IN THE COUNTRY WAS CONDUCTED, INVOLVING WATER QUALITY, PUBLIC HEALTH AND BIOLOGICAL FACTORS. WE STILL ROUTINELY RECEIVE REQUESTS FOR THE BOARD'S 1952 REPORT EXTENT EFFECTS AND LIMITATIONS OF WASTE DISPOSAL INTO SAN DIEGO BAY. IT'S OUT OF PRINT, BUT THE REMAINING FILE COPY IS A TRIBUTE TO THE ORIGINAL STAFF OF THE BOARD, EXECUTIVE OFFICER HAROLD MILLER AND ENGINEER ISADORE NUSBAUM (THAT WAS THE TOTAL STAFF).

THE BOARD'S 1952 REPORT INCLUDED THAT THE BAY WAS SUFFERING SERIOUS OXYGEN DEPLETION, EXCESSIVE BACTERIA CONCENTRATIONS, WIDESPREAD LETHAL SLUDGE DEPOSITS, FLOATING SEWAGE SOLIDS, AREAS OF TURBIDITY AND DISCOLORATION, FLOATING OIL AND GREASE PATCHES, AND UBIQUITOUS FLOATING RAFTS OF TRASH AND GARBAGE. THE FISH AND GAME ELEMENT OF THE REPORT WARNED OF IMPENDING DESTRUCTION OF ALL FAUNA IN THE BAY. BECAUSE OF LOW DISSOLVED OXYGEN AND BACTERIAL CONTAMINATION PROBLEM, PUBLIC HEALTH CONTRIBUTORS TO THE REPORT ADVISED HIGHER DEGREES OF WASTE TREATMENT OR REMOVAL OF MAJOR DISCHARGES FOR DISPOSAL ELSEWHERE. ONE OF THE BOARD'S CONCLUSIONS IN THE REPORT, IN EFFECT, SAID THAT WASTE DISCHARGES TO THE BAY MUST BE STOPPED; THE HIGH-ORDER MIX OF BENEFICIAL USES TO BE RESTORED AND PROTECTED JUST WOULD NOT TOLERATE USE OF THE BAY AS A WASTE SUMP.

ALMOST ON THE HEELS OF THE REGIONAL BOARD REPORT, THE SAN DIEGO COUNTY SEWERAGE SURVEY RELEASED ITS 500 PAGE TOME. THE PLAN PROPOSED FOR SAN DIEGO BAY AGREED COMPLETELY WITH THE REGIONAL BOARD'S CONCEPT: THE WASTES MUST COME OUT. IT WAS RECOMMENDED THAT THE BAY BE RINGED WITH MAJOR INTERCEPTOR SEWERS TO PICK UP ALL DISCHARGES IN THE METROPOLITAN AREA. COMBINED FLOW WOULD BE LED TO A TREATMENT PLANT ON THE COAST AT POINT LOMA. TREATED EFFLUENT WOULD BE DIFFUSED INTO THE OCEAN THROUGH A 7500 FOOT LONG OUTFALL AT A DEPTH OF 125 FEET. SUFFICIENT CAPACITY WOULD BE BUILT INTO THE INTERCEPTORS AND OUTFALL TO HANDLE ANTICIPATED FLOWS UP TO THE YEAR 2000; A POPULATION OF 2,500,000 WAS PREDICTED FOR THAT YEAR. THE COUNTY REPORT RECOMMENDED THAT THE CITY OF SAN DIEGO CONSTRUCT AND OPERATE THE METROPOLITAN FACILITIES, AND

FURNISH SERVICE TO ALL BAY AREA AND INLAND SUBURBAN COMMUNITIES.

FACED WITH ONE REPORT REVEALING ITS ABUSES OF THE BAY AND ANOTHER PROPOSING A SOLUTION, THE CITY OF SAN DIEGO ACTED PROMPTLY. IT SCHEDULED A \$16 MILLION DOLLAR BOND ISSUE TO FUND CONSTRUCTION OF THE SYSTEM. A YEAR-LONG PUBLIC EDUCATION CAMPAIGN WAS WAGED BY THE CITY, THE SAN DIEGO CHAMBER OF COMMERCE AND THE REGIONAL BOARD. BITTER OPPOSITION WAS ENCOUNTERED. NO ONE DISPUTED THE NEED TO CLEAN UP THE BAY. NOT ONE WORD WAS SAID AGAINST THE METROPOLITAN CONCEPT. NO MENTION WAS MADE ABOUT IMPACT ON TAXES. OPPONENTS WERE UNHAPPY ABOUT MOVING A SMELLY SEWAGE TREATMENT PLANT FROM AN INDUSTRIAL AREA TO THE ENVIRONS OF A CHOICE RESIDENTIAL NEIGHBORHOOD. AND THEY BERATED THE CITY FOR ONCE AGAIN BEING TOO PICAYUNE IN ITS SEWERAGE PLANNING BY PUTTING A PRICE TAG OF ONLY \$16 MILLION ON A METROPOLITAN SYSTEM. THE BOND ISSUE WAS VOTED DOWN IN 1954.

OBVIOUSLY, THIS INITIAL DEFEAT DID NOT DETER EITHER THE CITY OF SAN DIEGO OR THE REGIONAL BOARD. THE BOARD BEGAN IMPLEMENTING MORE FORMAL PROCEDURES WHICH, OVER A PERIOD OF TIME, WOULD LEAD TO THE COURTHOUSE, IF A SECOND BOND ISSUE FAILED. IT LET ALL BAY AREA DISCHARGERS KNOW OF ITS INTENTIONS. SAN DIEGO LOST NO TIME IN A SERIES OF COMPLEX MANOEUVRES TO ASSURE SUCCESS OF THE NEXT BOND ELECTION. A CHANGE IN THE CITY CHARTER WAS PUT BEFORE THE VOTERS. THE CITY WOULD BE AUTHORIZED TO REORGANIZE ITS WATER AND SEWER DEPARTMENTS INTO A SINGLE PUBLIC UTILITY, ISSUE REVENUE SEWERAGE BONDS AND INSTITUTE SEWER SERVICE CHARGES. VOTERS STRONGLY APPROVED THE INITIATIVE AS A "CLEAN-UP-THE-BAY" MEASURE. THE WAY WAS PAVED FOR SIMPLE MAJORITY PASSAGE OF THE NEXT BOND ISSUE.

SAN DIEGO ALSO CALLED IN OCEANOGRAPHIC CONSULTANTS IN 1955. A FIVE YEAR STUDY OF PHYSICAL AND BIOLOGICAL CONDITIONS IN THE OCEAN TO DETERMINE AN ALTERNATE PLANT AND OUTFALL SITE WAS STARTED. COST OF THE STUDY WAS \$100,000 PER YEAR -- NOW PRICES WERE GOING UP. RECOMMENDATIONS OF ITS CONSULTANTS EVENTUALLY BROUGHT THE CITY BACK TO POINT LOMA AS THE MOST SUITABLE LOCATION FOR OCEAN DISCHARGE.

BACK IN SAN DIEGO BAY, THE REGIONAL BOARD COMPLETED ANOTHER STUDY AND REPORT IN LATE 1954. IT SHOWED, OF COURSE, THAT CONDITIONS HAD BECOME WORSE. AND IT ALSO RECOGNIZED A NEW ELEMENT OF WATER QUALITY DEGRADATION, WHICH BECAME THE CARDINAL POINT IN ELIMINATION OF BAY WASTE DISCHARGES. MOST OF THE TURBIDITY AND DISCOLORATION HAD BEEN DISCOVERED TO BE CAUSED BY BIOLOGICAL ACTIVITY, NOT DIRECTLY BY THE WASTE DISCHARGES. BLOOMS OF MARINE MICRO-ORGANISMS, PHYTOPLANKTON, STIMULATED BY NUTRIENTS IN THE DISCHARGES, WERE CAUSING RED TIDES IN THE BAY. THE BOARD'S REPORT DESCRIBES THE CONDITION RATHER APTLY:

DURING THE PAST THREE YEARS, ESPECIALLY DURING THE SUMMER MONTHS, BLOOMS HAVE ON MANY OCCASIONS BEEN SO INTENSE AS TO IMPART A DEEP BROWNISH-RED COLOR TO THE WATER AND AT SUCH TIMES THE TURBIDITY REACHES PROPORTIONS WHERE THE TRANSPARENCY OF THE WATER IS REDUCED TO ONLY A SMALL FRACTION OF NORMAL--PRACTICALLY NIL. PERHAPS THE MOST VIVID DESCRIPTION WHICH CAN BE GIVEN OF THE APPEARANCE OF THE WATER AT SUCH TIMES IS THAT IT RESEMBLES BROWN PEA SOUP.

NOWADAYS, WE CALL THE PROBLEM EUTROPHICATION, AND IT IS INDEED WELL-KNOWN. SIXTEEN YEARS AGO, IT SERVED TO CONVINCING THE REGIONAL BOARD THAT EVEN SECONDARY TREATMENT AND HIGH DISINFECTION WERE INADEQUATE TO PREVENT POLLUTION IN OUR ESTUARY.

DURING 1955, SEVERAL IMPORTANT EVENTS KEPT BAY POLLUTION UPPERMOST IN THE PUBLIC MIND AND SERVED TO PAVE THE WAY FOR POSSIBLE COURT ACTION. A SERIES OF WELL-PUBLICIZED HEARINGS WERE HELD, AFTER WHICH THE REGIONAL BOARD ADOPTED A DETAILED FORMAL POLICY ENUNCIATING BENEFICIAL USES OF BAY WATERS IT INTENDED TO PROTECT AND RESTORE. WATER QUALITY CRITERIA FOR THE BAY COMMENSURATE WITH THOSE USES WERE PART OF THE POLICY. NOT ONLY WAS THIS A LEGAL STEP, BUT IT ALSO GAVE THE AREA A YARDSTICK OF WHAT WAS ALREADY LOST, WHAT WAS ENDANGERED AND HOW BADLY THE WATER WAS POLLUTED. BASED UPON THIS POLICY, THE BOARD IMPOSED WASTE DISCHARGE REQUIREMENTS WHICH COULD NOT POSSIBLY BE MET UPON THE MUNICIPAL DISCHARGERS. MUNICIPAL DISCHARGERS WERE THEN FORMALLY DECLARED POLLUTERS UNDER THE CALIFORNIA WATER CODE.

DURING 1955 ALSO, THE STATE BOARD OF PUBLIC HEALTH AND THE SAN DIEGO COUNTY DEPARTMENT OF PUBLIC HEALTH DECLARED MUCH OF THE BAY CONTAMINATED. QUARANTINE AND WARNING SIGNS WENT UP ALONG ABOUT TEN MILES OF SHORELINE. EMERGENCY CHLORINATION WAS STARTED BY THE CITIES AND ONE MILITARY BASE. THAT GESTURE DID ONLY A LIMITED AMOUNT OF GOOD BECAUSE THE DISCHARGES WERE EITHER RAW SEWAGE, OR NOT MUCH DIFFERENT FROM RAW SEWAGE.

BY 1956, WHEN I WAS EMPLOYED BY THE REGIONAL BOARD, THE FOUNDATION FOR BAY CLEAN-UP HAD ALREADY BEEN WELL LAID. WHAT HAPPENED IN SUBSEQUENT YEARS CAN BE BRIEFLY SUMMARIZED, BECAUSE WE HAVE NEVER REALLY DEVIATED FROM THE PATH PIONEERED TWENTY YEARS AGO. NEEDLESS TO SAY, POLLUTION IN THE BAY DID GET RAPIDLY WORSE. BLOOMS BECAME PERSISTENT, AND THROUGHOUT THE YEAR WE HAD A MASS OF BROWN PEA-SOUP FROM ONE END OF THE BAY TO THE OTHER, SOMETIMES TURNING BLOOD-RED. AT BEST, DISSOLVED OXYGEN CONCENTRATIONS MEASURED ONLY A FEW PARTS PER MILLION, AND ZERO OXYGEN LEVELS WERE COMMON. OUR FISH AND GAME ADVISORS TOLD US THAT PRACTICALLY THE ENTIRE INLET HAD BECOME A MARINE DESERT. A FEW FISH WERE VENTURING IN NEAR THE MOUTH; HARDY STING-RAYS COULD BE FOUND AT THE EXTREME SOUTH END. SLUDGE UP TO SIX FEET THICK BLANKETED THE BOTTOM ALONG FIVE MILES OF THE EAST SHORE. QUARANTINE SIGNS REMAINED UP, TO THE CONSTERNATION OF RECREATIONISTS. (A NATIONAL WATER SKI MEET IN THE BAY HAD TO BE CANCELLED). THE NAVY HAD TO SWITCH TO FRESH WATER TO WASH DOWN THEIR SHIPS FOR THE PROTECTION OF CREWMEN.

WE CONTINUED TO HERD SAN DIEGO AND ITS SISTER COMMUNITIES TOWARD A COMMON SOLUTION. IN SOME CASES, WE HAD TO STOP WELL INTENTIONED AND AMBITIOUS PROJECTS. THE CITY OF CORONADO, FOR EXAMPLE, WANTED TO BUILD ITS OWN SECONDARY TREATMENT PLANT TO REMEDY ITS RAW SEWAGE DISCHARGE INTO THE BAY. THEIR CITY FATHERS WERE MORE THAN A LITTLE PERPLEXED WHEN WE INSISTED UPON WHAT THEY REGARDED AS AN UNHOLY ALLIANCE WITH THE BIG TOWN ACROSS THE BAY. WHEN THEY DECIDED THAT THE REGIONAL BOARD WAS SERIOUS AND THAT A METROPOLITAN LINK WOULD BE CHEAPER, CORONADO WAITED FOR SAN DIEGO. SOMEWHAT THE SAME TREATMENT WAS GIVEN TO CHULA VISTA, IMPERIAL BEACH, SPRING VALLEY AND EL CAJON, MY HOME CITY.

ON THE OTHER HAND SAN DIEGO FELT THE HEAT. BY THE LATE FIFTIES, SAN

DIEGO'S OVERLOADED TRUNKS WERE SPOUTING RAW SEWAGE AT A NUMBER OF LOCATIONS. MISSION BAY, A LARGE AQUATIC PARK, WAS IMPERILED. THE REGIONAL BOARD CALLED CITY OFFICIALS BEFORE IT FREQUENTLY TO REVIEW PROBLEMS AND HEAR PROGRESS REPORTS. OUR MEETINGS ARE PUBLIC AND THE SAN DIEGO PRESS HAD ALREADY STARTED ITS OWN CAMPAIGN AGAINST WATER POLLUTION. AS OUR THEN BOARD CHAIRMAN, COUNTY HEALTH OFFICER J. B. ASKEW, PUT IT, "WE KEPT SAN DIEGO'S FEET TO THE FIRE."

SAN DIEGO, HOWEVER, WAS BUSILY WORKING ON THE METROPOLITAN SCHEME. CONTRACTUAL ARRANGEMENTS WERE BEING NEGOTIATED WITH POTENTIAL SYSTEM PARTICIPANTS. THERE WAS NO COORDINATION BETWEEN THE CITY AND OUR BOARD IN THIS EFFORT, BUT IN SOME QUARTERS IT WAS REGARDED AS A TEAM PLAY, WITH THE BOARD RUNNING INTERFERENCE FOR THE CITY. OUR MUTUAL ASSISTANCE WAS INEVITABLE, IN VIEW OF THE COMMON GOAL.

BY 1958, OCEANOGRAPHIC STUDIES HAD PROGRESSED TO THE POINT WHERE SAN DIEGO COULD AGAIN DECIDE THE ISSUE OF PLANT LOCATION. A CONSULTING ENGINEERING TEAM WAS EMPLOYED AND A NEW STUDY OF THE METROPOLITAN PROPOSAL WAS CONDUCTED. ESSENTIALLY THE SAME PLAN WAS DECIDED UPON, BUT WITH A MUCH MORE CONSERVATIVE APPROACH: EVEN BIGGER LINES, LARGER PUMPING STATIONS, A PLANT ON A REMOTE SITE NEAR THE SOUTHERLY TIP OF POINT LOMA AND A 13,000 FOOT LONG OCEAN OUTFALL RATHER THAN 7500 FEET. COST WAS TABBED AT \$42.5 MILLION DOLLARS, MORE THAN DOUBLE THE 1952 ESTIMATE.

SIX YEARS AFTER TURNING DOWN THE FIRST METROPOLITAN BOND ISSUE, SAN DIEGO VOTERS ENTHUSIASTICALLY ENDORSED A \$42.5 MILLION ISSUE IN 1960. MANY FORMER OPPONENTS HAD, BY NOW, JOINED SUPPORTERS, ENCOURAGED BY THE MORE CONSERVATIVE DESIGN. CONSTRUCTION STARTED IN 1961, BUT ONLY AFTER THE CITY LEARNED THAT PROJECT COSTS HAD BEEN GREATLY UNDERESTIMATED. THIS CRISIS WAS OVERCOME BY SHORTENING THE OUTFALL TO 11,400 FEET, REDUCING SOME OTHER COMPONENTS AND BY BORROWING ABOUT \$9 MILLION FROM OTHER CITY FUNDS, BRINGING THE CITY'S COST TO ABOUT \$51.5 MILLION. BY NOW, PARTICIPATING COMMUNITIES HAD FUNDED AND STARTED WORK ON THE VARIOUS LINES TO LINK THEM WITH SAN DIEGO. WHEN MONEY SPENT ON INTERTIE FACILITIES IS ADDED IN, COST OF THE METROPOLITAN PROGRAM COMES TO ABOUT \$60 MILLION, NINETY-FIVE PERCENT OF WHICH WAS PAID BY LOCAL COMMUNITIES.

EVEN THOUGH CORRECTION OF BAY POLLUTION WAS ASSURED IN 1961, THE REGIONAL BOARD ISSUED CEASE AND DESIST ORDERS AGAINST SAN DIEGO AND OTHER AREA CITIES THAT YEAR. ORDERS ARE THE ULTIMATE STEP BEFORE GOING INTO COURT UNDER CALIFORNIA LAW. THE BOARD WANTED TO BE ABLE TO MOVE FAST JUST IN CASE SOMETHING WENT WRONG. WHEN OPPONENTS OF THE PROJECT TEMPORARILY BLOCKED SALE OF THE METROPOLITAN BONDS BY FILING A LAWSUIT, THE WISDOM OF THE BOARD'S ACTION EMERGED. WE WERE ABLE TO HELP BREAK THE DEADLOCK BY THREATENING TO TAKE LEGAL ACTION AGAINST SAN DIEGO TO STOP ALL CITY GROWTH.

SAN DIEGO COMPLETED THE METROPOLITAN SEWERAGE SYSTEM IN MID-1963. THIRTEEN YEARS HAD PASSED SINCE FIVE MEN HAD CONVENED AND FIXED THEIR SIGHTS ON A CLEAN BAY. SIXTY MILLION DOLLARS HAD BEEN SPENT. WAS IT WORTHWHILE?

THERE WASN'T MUCH FANFARE WITH THE INCEPTION OF METROPOLITAN OPERATION. BUT BAY-WATCHERS WERE STARTLED. WE WERE EXPECTING A GRADUAL UPGRADING OF WATER QUALITY OVER A PERIOD OF MONTHS. WITHIN DAYS OF TERMINATION OF SAN

DIEGO'S 55 MILLION GALLON PER DAY DISCHARGE TO THE BAY, THE PUTRID BROWNISH-RED COLOR WAS GONE. IT TOOK ABOUT TWO WEEKS FOR THE BAY TO TURN ALMOST CRYSTAL-CLEAR, DESPITE THE REMAINING DISCHARGES. FISH LITERALLY SWARMED BACK IN. BY FEBRUARY 1964, ALL SHORE BASED SEWAGE DISCHARGES TO SAN DIEGO BAY WERE ENDED, AS CORONADO PUMPED ITS SEWAGE THROUGH A TRANSBAY LINE INTO THE METROPOLITAN INTERCEPTOR.

FOR THE PAST SEVERAL YEARS, THE METROPOLITAN SYSTEM HAS PROVEN ITS VERSATILITY IN PROVIDING SERVICE TO INDUSTRIAL DISCHARGERS REQUIRED TO MEND THEIR WAYS BY THE REGIONAL BOARD. ALL CIVILIAN INDUSTRIES FORMERLY DISCHARGING TO SAN DIEGO BAY HAVE CONNECTED TO METRO, EXCEPT, OF COURSE, THE POWER PLANTS. THE ONE LARGE TUNA PLANT REMAINING IN SAN DIEGO NOW DISCHARGES ONLY COOLING WATER AND TREATED FLUME WATER.

THE U.S. NAVY IS RESPONSIBLE FOR THE LAST REMAINING SHORE-BASED SOURCE OF POLLUTION. NORTH ISLAND NAVAL AIR STATION PUTS ABOUT 500,000 GALLONS PER DAY OF UNTREATED TOXIC INDUSTRIAL WASTE INTO THE BAY. LOCAL NAVAL OFFICIALS HAVE LONG BEEN CONCERNED, BUT FEDERAL PRIORITIES AND PROCEDURES DICTATED A SOLUTION IN FISCAL 1971. MONEY IS AVAILABLE, A SYSTEM HAS BEEN DESIGNED AND THE NAVY INTENDS TO COMPLETE IT EARLY NEXT YEAR. ONCE AGAIN, PRETREATMENT AND DISCHARGE TO THE METROPOLITAN SYSTEM WILL BE EMPLOYED.

I'VE ALREADY BRIEFLY ALLUDED TO THE STARTLING CHANGE IN BAY WATER QUALITY BACK IN MID-1964. WHAT'S IT LIKE NOW? PERSONALLY, I THINK ITS WONDERFUL TO BE ABLE TO DRAW PEOPLES' ATTENTION TO THE BAY, RATHER THAN TRYING TO GET THEM AWAY FROM THE NEIGHBORHOOD BLIGHT. IT LOOKS JUST FINE -- WITH SOME EXCEPTIONS. BUT MORE THAN THAT, IT IS CLEAN. YOU CAN SWIM ANYWHERE IN THE BAY, EXCEPT NEAR THE LARGE VESSELS, AND KNOW THAT THE BACTERIAL QUALITY OF THE WATER IS EXCELLENT. YOU CAN CATCH FISH ALMOST ANYWHERE IN THE BAY; IT'S LOADED WITH BAIT AND FINGERLINGS. SARDINES WERE RECENTLY FOUND IN THE BAY IN LARGE SCHOOLS -- THE FIRST TIME IN TWENTY YEARS IN SOUTHERN CALIFORNIA. TRANSPARENCY HAS DECREASED SOMEWHAT SINCE 1964 AS NEW MARINE FLORA HAVE ESTABLISHED THEMSELVES, BUT IT IS STILL 12 TO 15 FEET BY SECCHI DISK IN THE CENTRAL BAY.

ONE NEED ONLY LOOK AT THE NEW HIGH-RISE HOTELS, THE MARINAS AND RESTAURANTS SPROUTING OUT IN THE BAY ON MAN-MADE HARBOR ISLAND. THE PEOPLE OF SAN DIEGO AND THEIR VISITORS ARE ENJOYING THE BAY. PLANS OF THE SAN DIEGO UNIFIED PORT DISTRICT CALL FOR REMODELING THE ENTIRE EMBARCADERO, PIERS AND ALL, INTO A TOURIST HAVEN. CERTAINLY, THIS WOULD BE LAUGHABLE IF THE BAY WERE STILL A CESSPOOL. WITH A CLEAN BAY, IT MAKES GOOD SENSE.

PLEASE DON'T LET ME GIVE YOU THE IMPRESSION THAT OUR BAY IS STRICTLY A RECREATIONAL FACILITY. EVEN THOUGH IT'S THERE FOR SWIMMING, BOATING AND SWIMMING; FISHING OR JUST LOOKING, IT'S TRULY A MULTI-PURPOSE HARBOR. HEAVY INDUSTRY, INCLUDING THE MILITARY, LINES MILES OF BAYFRONT. WE HAVE JUST AS MANY HEAVY VESSEL SAILINGS AS ANY OTHER CALIFORNIA PORT, MORE AT TIMES. AND A MILLION PEOPLE NOW LIVE IN OUR BAY AREA. THE IMPRESSION I AM TRYING TO LEAVE YOU WITH IS THAT, AS FAR AS WATER POLLUTION IS CONCERNED, THE IMCOMPATIBILITIES CAN BE IRONED OUT IF YOU HAVE AN EFFECTIVE PROGRAM.

WE STILL HAVE SOME PROBLEMS IN SAN DIEGO BAY -- IT'S NOT YET PRISTINE PURE AND PROBABLY NEVER WILL BE. I'VE MENTIONED THE DISCHARGES AWAITING FINAL CORRECTION. SOME OF OUR 3000 PLEASURE BOATS AND SEVERAL HUNDRED LARGE

VESSELS ADD SEWAGE TO THE BAY. THE PRESENCE OF THE NAVAL FLEET BRINGS CHRONIC OIL SPILLS. WE HAVE BROUGHT SUIT AGAINST THE NAVY FOR OIL POLLUTION IN THE OCEAN, AND OIL AND SEWAGE POLLUTION IN THE BAY. AS DILIGENT AS OUR LOCAL AGENCIES AND THE NAVY ARE IN PREVENTING AND CLEANING UP FLOATING TRASH, ANY AT ALL IS STILL TOO MUCH IN OUR SITUATION. BUT ALL OF THESE PROBLEMS CAN AND WILL BE CORRECTED, ESPECIALLY WITH OUR NEW LAW IN EFFECT.

BEFORE CONCLUDING, LET'S TAKE A QUICK LOOK AT THE OCEAN DISCHARGE WHICH SAN DIEGO SUBSTITUTED FOR THE FORMER DISCHARGES TO THE BAY. VOLUME OF FLOW THROUGH THE OUTFALL IS NOW OVER 90 MILLION GALLONS PER DAY. IN ESTABLISHING REQUIREMENTS FOR THE OPERATION, THE REGIONAL BOARD IMPOSED AN OBLIGATION ON THE CITY TO CONDUCT PERHAPS THE MOST COMPREHENSIVE OCEAN SURVEILLANCE PROGRAM EVER GIVEN TO A DISCHARGER. SINCE 1962, THERE HAS BEEN A GREAT DEAL OF ROUTINE SAMPLING ALONG THE COAST AND UP TO SIX MILES OFF SHORE. THE USUAL PHYSICAL, CHEMICAL AND BACTERIOLOGICAL PARAMETERS OF WATER QUALITY ARE TESTED. BUT, IN ADDITION, VERY HEAVY EMPHASIS HAS BEEN PLACED UPON BIOLOGICAL DETERMINATIONS OVER THE YEARS.

WE HAVE SO MUCH DATA THAT WE HAD TO HAVE A COMPUTER PROGRAM DESIGNED AND EMPLOY ECOLOGICAL CONSULTANTS TO REVIEW THE DATA. IT'S NOW COSTING US UP TO \$15,000 JUST TO PROCESS ONE BATCH OF SAN DIEGO'S DATA. THE CITY INVESTS MUCH MORE IN DOING THE SAMPLING, ANALYSIS AND IDENTIFICATIONS. PUT BRIEFLY, WE KNOW THAT THE METROPOLITAN SYSTEM IS NOT POLLUTING THE OCEAN, BASED UPON HARD FACT.

NEW UNITS ARE ALREADY BEING ADDED TO THE METROPOLITAN PLANT TO INCREASE ITS CAPACITY. TREATMENT IS STILL AT THE PRIMARY LEVEL; BUT ONLY TEMPORARILY. PLANNING IS ABOUT TO BE INITIATED TO UPGRADE TREATMENT, IN LINE WITH CURRENT REGULATORY THINKING.

THAT'S OUR STORY TO DATE. IT IS A CONTINUING ONE, SINCE THE JOB WILL NEVER BE COMPLETED. I HOPE THAT I HAVE CONVEYED TO YOU MY FEELING OF OPTIMISM. OUR EXPERIENCE HAS BEEN THAT THE PEOPLE, THEIR LOCAL AGENCIES AND THEIR INDUSTRY WERE RESPONSIVE TO A BOARD IN WHICH THEY HAD TRUST AND CONFIDENCE. BUT THAT BOARD MADE IT KNOWN THAT IT MEANT BUSINESS. AND I BELIEVE THAT NEARLY EVERYONE MEANS BUSINESS ABOUT ENDING WATER POLLUTION NOW.

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